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A NEW SPECIES OF *SCROPHULARIA* (SCROPHULARIACEAE) FROM NORTHEASTERN MEXICO

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ABSTRACT

A new species from the mountains of northeastern Mexico is described and illustrated: **Scrophularia mexicana** Mayfield & Nesom. The new species is compared to the more widely distributed *S. marilandica* from the eastern USA, from which it is geographically separated by more than 700 kilometers.

Scrophularia L. in North America is represented by 11 native and at least one introduced species, as currently considered (e.g., Hitchcock & Cronquist 1973; Martin & Hutchins 1981; Gleason & Cronquist 1991; Wetherwax 1993; Kartesz 1999). *Scrophularia marilandica* L. is the only species restricted to the eastern USA. and adjacent Canada (west to northeastern Texas and Oklahoma). *Scrophularia lanceolata* Pursh also occurs in the eastern USA but is distributed sporadically from coast to coast in the northern half of the USA and southern Canada. The remaining North American species occur from the southern Rocky Mountains to California, Washington, and British Columbia. Among the native North American species, *S. californica* Cham. & Schlect. and *S. villosa* Pennell are the only ones known to occur naturally in Mexico, each represented there by southward range extensions.

Here we describe a new species known only from a single population in the mountains of Nuevo León, about 30 kilometers (air) northwest of Victoria, Tamaulipas. The new species is geographically separated from the closest known populations of any *Scrophularia* species (*S. marilandica*) by more than 700 kilometers.

Scrophularia mexicana Mayfield & Nesom, sp. nov. (Figs. 1, 2, and 3). **TYPE: MEXICO. Nuevo León**. Mpio. Aramberri, along the road to Dulces Nombres, Nuevo León, from Sta. Engracia, Tamaulipas, 36 road miles from Sta. Engracia, at the road crossing of the deep canyon of Arroyo Ramirez Luna, riparian association of *Juglans mollis*, *Carya palmeri*, *Quercus rysophylla*; *Scrophularia* scattered and uncommon along gravel bars of stream with thick herbaceous vegetation, 1390 m, 23° 58' 13" N, 99° 31' 12" W, 22 Sept 1994, *Guy Nesom 7474* with Mark Mayfield (holotype: MEXU; isotypes: TEX, US).

Similar to *Scrophularia marilandica* L. but different in its villous-glandular stems, smaller leaves with shorter petioles, and narrowly oblanceolate staminodes with acute apices.

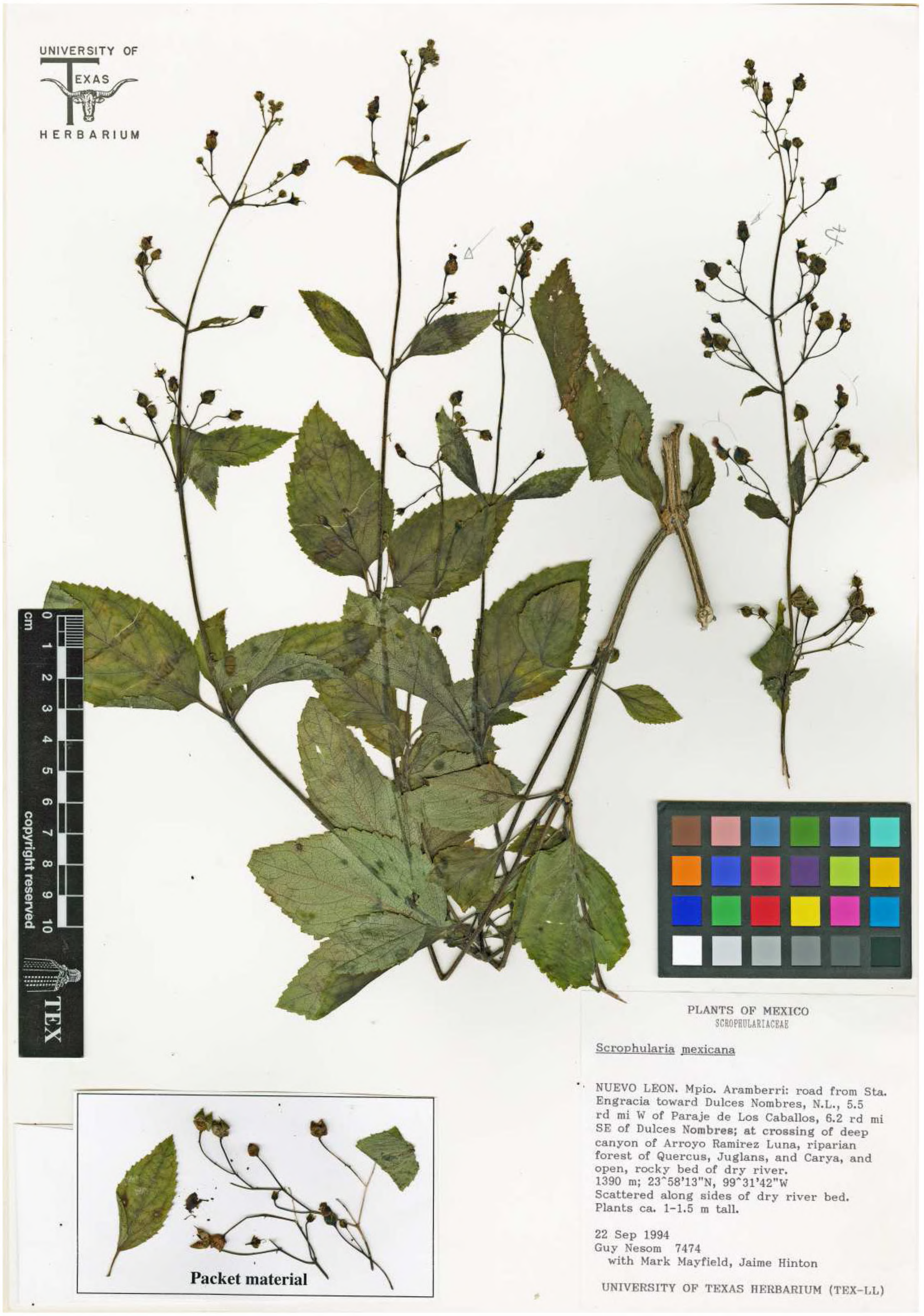
UNIVERSITY OF TEXAS HERBARIUM
cm 0 1 2 3 4 5 6 7 8 9 10
copyright reserved
TEX
PLANTS OF MEXICO
SCROPHULARIACEAE
Scrophularia mexicana
NUEVO LEON. Mpio. Aramberri: road from Sta. Engracia toward Dulces Nombres, N.L., 5.5 rd mi W of Paraje de Los Caballos, 6.2 rd mi SE of Dulces Nombres; at crossing of deep canyon of Arroyo Ramirez Luna, riparian forest of Quercus, Juglans, and Carya, and open, rocky bed of dry river.
1390 m; 23^58'13"N, 99^31'42"W
Scattered along sides of dry river bed.
Plants ca. 1-1.5 m tall.
22 Sep 1994
Guy Nesom 7474
with Mark Mayfield, Jaime Hinton
UNIVERSITY OF TEXAS HERBARIUM (TEX-LL)
Packet material

Figure 1. *Scrophularia mexicana*, isotype (TEX).

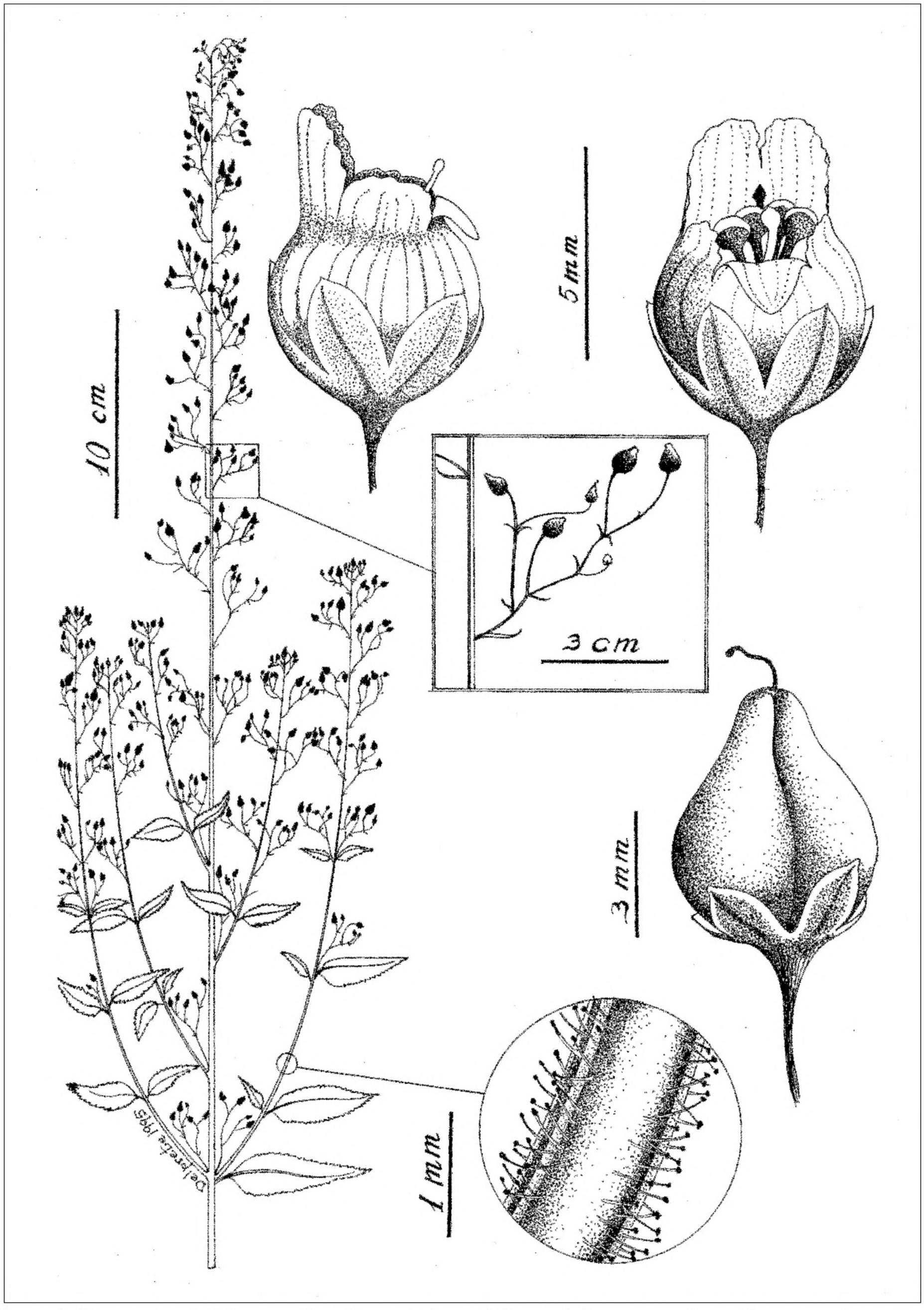

Figure 2. Upper stem habit, ventral and lateral view of flower, inflorescence branching, capsule, and stem vestiture of *Scrophularia mexicana*.

Stems 1.0–1.4 m tall, erect, squared in cross-section, the angles rounded, villous in the inflorescence and at least to midstem with simple and gland-tipped hairs (0.1–)0.2–0.8(–1.0) mm long, the trichomes vitreous, shortest along the axis of the inflorescence. **Leaves**: blades (mid to upper stems) ovate with acute apex and obtusely rounded to broadly subacuminate at base, 4–7 cm long, 2–4 cm wide, the margins crenate-serrate, petioles 5–15 mm long, somewhat flattened laterally. **Inflorescences** apical and solitary at the tips of the several branches and mainstem, each consisting of a raceme of diffusely branched, ascending cymes, the primary branches divergent and slightly ascending. **Corollas** broadly cylindric to subglobose, 7–8 mm long, reddish-brown, the lower lip light-green; staminode (sterile filament) dark purple, the free portion ca 1.5 mm long, oblanceolate, 0.4–0.5 mm wide at the widest point, acute- to subacute-deltoid at the apex. **Capsules** 5–6 mm long, ovoid to pyriform, apically blunt or slightly depressed, greenish-brown, somewhat lustrous. **Seeds** ca 1 mm long, black, rugose. Known only from the type collection.

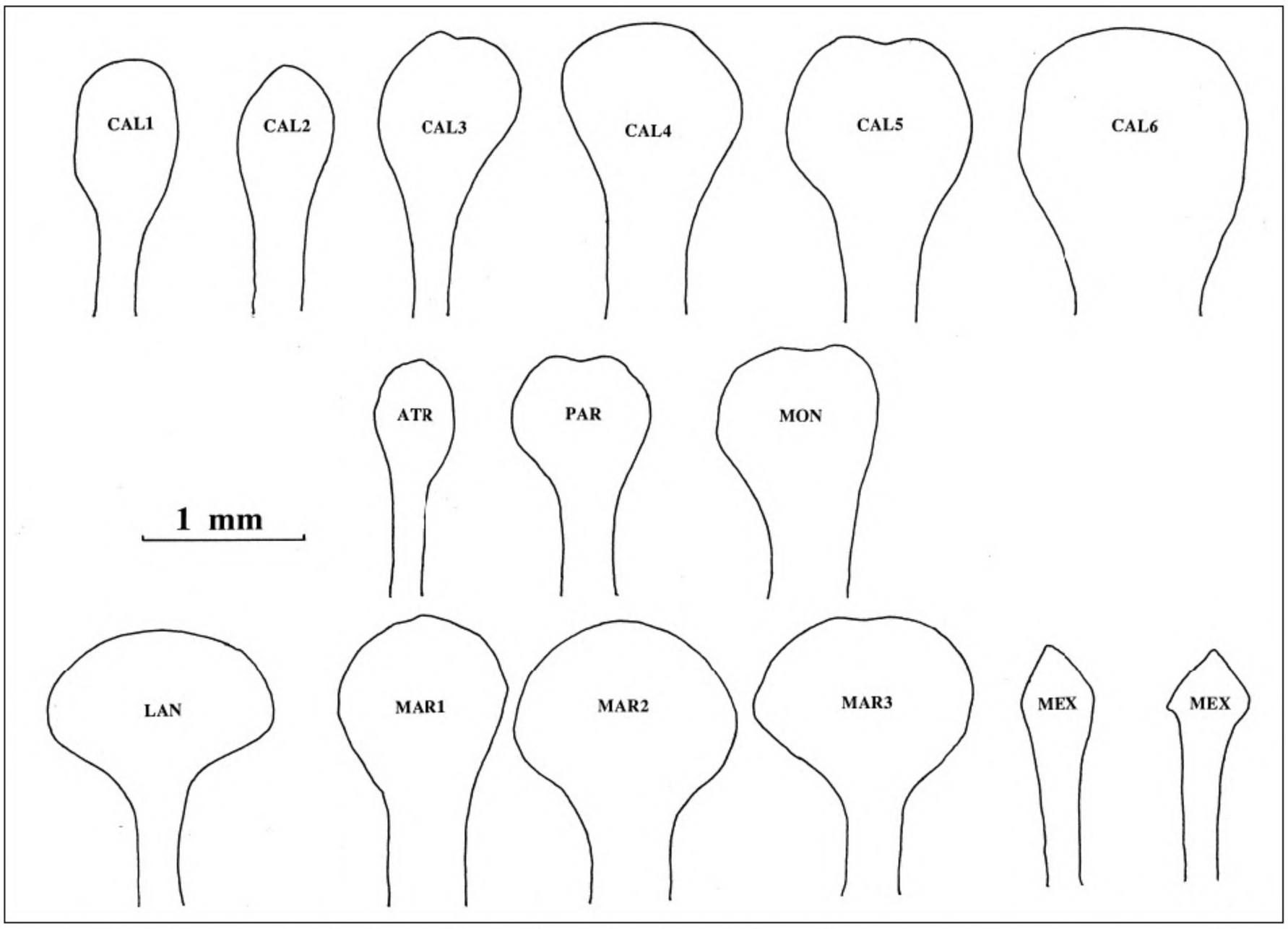

Figure 3. Variation in terminal portions of staminodes of *Scrophularia* species. Top line: **CAL** = *S. californica* sensu lato (including var. *californica*, var. *floribunda*, *S. oregana*, and *S. desertorum*). Middle line: **ATR** = *S. atrata*, **PAR** = *S. parviflora*, **MON** = *S. montana*. Bottom line: **LAN** = *S. lanceolata*, **MAR** = *S. marilandica*, **MEX** = *S. mexicana*.

The cauline vestiture of long, vitreous, glandular trichomes (Fig. 2) and narrow, acute staminodes (Fig. 3) are the most divergent features that distinguish *Scrophularia mexicana* from other North American members of the genus. The new species is compared here to the widespread *S. marilandica* not because of direct evidence of close relationship but because it is the geographically closest *Scrophularia* species and because biogeographical considerations suggest a possible close relationship between them (see comments below). The key differences between *Scrophularia mexicana* and *S. marilandica* are summarized in the following couplet.

1. Stems minutely glandular in the inflorescence, trichomes mostly less than 0.1 mm long; free portion of the staminode spatulate, blunt and rounded apically, 1.2–1.8 mm wide; blades of upper stem leaves mostly (6–) 8–15 cm long, the petioles 10–20(–25) mm long ..... **Scrophularia marilandica**
1. Stems villous-glandular in the inflorescence and at least to midstem, the glandular trichomes (0.1–) 0.2–0.6(–1.0) mm long; free portion of the staminode oblanceolate and apically acute, 0.4–0.5 mm wide; blades of upper stem leaves 4–7 cm long, the petioles 5–15 mm long ..... **Scrophularia mexicana**

Although the western species of *Scrophularia* have been studied comparatively (Shaw 1962), all of the North American species have yet to be considered within a single study, which we believe will emphasize the close vegetative similarities between *S. californica* sensu stricto, *S. marilandica*, and *S. mexicana*. All three of these species share a rather uniform glandular pubescence, basally rotund leaves with evenly serrate margins, and tend to have spreading diffuse inflorescences. None of these characters, however, is invariant within a species.

Scrophularia mexicana shares no unequivocally derived features with any other species or group of species of North America that would suggest a phyletically coordinate relationship. Most keys emphasize the staminode morphology in distinguishing some of the paired species, an indication that this character may be more consistent than others. The staminodia of *S. mexicana* are unique in having the free portion more elongate, much narrower, and more acutely apiculate than all other North American species. Nevertheless, the floristic relationship between the eastern and southeastern United States and the Sierra Madre Oriental of Mexico is well known and demonstrated by numerous species pairs and disjunctions within species (see Nesom and Mayfield 1995 for examples and discussion). A hypothesis that *S. mexicana* and *S. marilandica* are closely related is consistent with this biogeographical phenomenon as well as the morphology.

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LITERATURE CITED

Gleason H.A. and A. Cronquist. 1991. Manual of vascular plants of northeastern United States and adjacent Canada (ed. 2). The New York Botanical Garden, Bronx, New York.

Hitchcock, C.L. and A. Cronquist. 1973. Flora of the Pacific Northwest, an illustrated manual. Univ. of Washington Press, Seattle.

Kartesz, J.T. 1999. A synonymized checklist and atlas with biological attributes for the vascular flora of the United States, Canada, and Greenland. In: J.T. Kartesz and C.A. Meacham. Synthesis of the North American Flora, Version 1.0. North Carolina Botanical Garden, Chapel Hill.

Martin, W.C. and C.R. Hutchins. 1981. A Flora of New Mexico (vol. 2). J. Cramer, Vaduz.

Nesom, G.L. and M.H. Mayfield. 1995. A new species of *Dirca* (Thymelaeaceae) from the sierra of northeastern Mexico. Sida 16: 459–467.

Shaw, R.J. 1962. The biosystematics of *Scrophularia* in western North America. Aliso 5: 147–178.

Wetherwax, M. 1993. *Scrophularia*. Page 1062, in J. Hickman (ed.). The Jepson Manual, higher plants of California. Univ. California Press, Berkeley.